ON

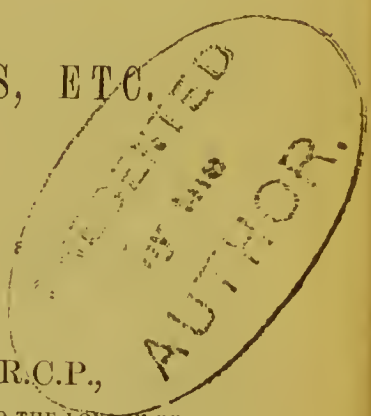
GASTRO-COLIC FISTULA.

A

COLLECTION OF CASES AND OBSERVATIONS

ON ITS

PATHOLOGY, DIAGNOSIS, ETC.



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ON

GASTRO-COLIC FISTULA.

A.—GENERAL OBSERVATIONS ON FISTULA OF THE DIGESTIVE CANAL.

THE subject of intestinal fistulæ, excepting those fistulæ which occur in the neighbourhood of the anal orifice, is one, which hitherto has not received the attention which it deserves. Yet there is no part of the digestive canal in which fistulous communications may not be established, either with the external surface, with another part of the same canal, or with some other naturally existing cavity. These fistulæ have been divided by Cruveilhier into two classes, supra and sub-diaphragmatic. To the former class, or those occurring in the portion of the digestive canal above the diaphragm, belong the following varieties:—

1. *Bucco-nasal:* between the mouth and nasal passages.
2. *Bucco-maxillary:* between mouth and antrum of Highmore.
3. *Salivary:* between salivary ducts and external surface.
4. *Between Mouth, Pharynx, or Œsophagus, and External Surface,* an occasional result of cut throat, etc.
5. *Between Pharynx and Larynx,* as sometimes results from phthisis laryngea. (Cruveilhier.) Two cases of this variety, which occurred in the practice of Dupuytren, are also recorded in the *Gaz. des Hôpitaux,* tom. v., pp. 249 and 309.
6. *Between Œsophagus and Trachea,* cases of which may be found by the following references:—

Dublin Medical Press, vol. iv. Dr R. Paterson, in *Edin. Med. and Surg. Journal,* Jan. 1849, and *Arch. Gén. de Méd.,* Ser. 4,

tom. xix., p. 214. Dr H. Green, *Treatise on Diseases of Air Passages*. Viglas, in *Prag. Vierteljahrschrift*, vol. li., Sup. p. 30. Cruveilhier, *Traité d'Anat. Path.*, ii., 537–8. Several cases in Guy's Hosp. Museum, see Dr Habershon, *Guy's Hosp. Rep.*, 3d Ser., ii., 215 and 221. Dr Wilks, *Tr. Path. Soc. Lond.*, vi., 179. Dr Ogle, *Tr. Path. Soc.*, vii., 52.

The fistulæ in these cases have resulted from simple or cancerous ulceration, but in Dr Ogle's case the opening was congenital. In most, the disease appears to have commenced in the œsophagus, where the opening has been much larger than in the trachea; but in one (Guy's Hosp. Museum, Prep. 1711[87]) it evidently commenced in the trachea.

7. *Between the Œsophagus and Bronchi;* of which the following are references to cases:—

Dr Sym, *Edin. Med. and Surg. Journal*, 1835. Two cases by Dr Berton in *Dublin Med. Journal*, vol. vii., p. 127. Dr Winn, *Med. Times*, Old Ser., vol. xiii., p. 386. Cruveilhier, *Traité d'Anat. Path.*, ii., 538. Salter, in *Lancet*, 1853, ii., 411. Habershon, *Guy's Hosp. Rep.*, 3d Ser., ii., 230.

In the majority of these cases, the communication has taken place between the œsophagus and *left* bronchus, a circumstance which is fully explained by the anatomical relations of the parts—the more longitudinal course of the left bronchus, and the situation of the œsophagus rather to the left of the mesial line. In one case only, have I found it stated that the opening was into the right bronchus; and here it resulted from the softening of a large scrofulous gland, lying between and connecting the two.

8. *Between Œsophagus and Pleura.*—A case in the Museum of St Bartholomew's Hospital (Ser. xxiv., No. 14) shows an abscess of the neck, which burst into the right pleura and œsophagus, producing a pleuro-œsophageal fistula and pneumo-thorax.

9. *Between Œsophagus and Aorta.*—This is a not unfrequent termination of aneurism of the aorta. A case also has been recorded by Mr Flower, in which a similar result followed a perforating ulcer of the œsophagus (*Dublin Med. Press*, xxx., p. 17, and *Assoc. Med. Journal*, i., 722).

10. *Between Œsophagus and Pericardium.*—Three such cases have been recorded:—

Dr Sym, *Edin. Med. and Surg. Journal*, 1835; Mr Trotter, *Tr. Path. Soc. Lond.*, 1847 (prep. of this case in Museum of St Mary's Hosp., C. a. 2); and Dr Parkes, *Tr. Path. Soc.*, ii., 40.

Fistulæ of the digestive passages, below the diaphragm, may be divided into Gastric, Cystic, Intestinal, Intestino-urinary, and Intestino-genital.

I. *Gastric-Fistulæ.*—Of these there are the following varieties:—

1. *Gastro-Colic Fistulæ*, or communications between the stomach and colon, the subject of the present memoir.

2. *Gastro-Duodenal*, between the stomach and duodenum, as in:

Two cases by Cruveilhier, *Traité d'Anat. Path.*, ii., 540, and Livr. xxvii., pl. 1, fig. 2. Dittrich, *Prag. Vierteljahrschrift*, xiii., p. 125. Barlow's *Man. of Pract. Med.*, p. 422. Barclay, *Med. Times and Gaz.*, 1850, i., 439.

There are only five cases which I have found in the same search, which has yielded thirty-three cases of gastro-colic fistulæ. Hence, I cannot subscribe to the statement of a recent writer, M. Houel,[1] that the former are more common than the latter. Two of these cases resulted from cancer, and three from simple ulceration of the stomach. In the last case, the opening was into the upper portion of the duodenum, although Cruveilhier and Houel maintain that it is always in the third part.

3. *Between Stomach and Jejunum or Ileum.*

Dr Brinton, *Brit. and For. Med. Chir. Review*, xix., 479.

4. *Between the Stomach and Pleural Cavities or Lungs.*—Two cases have been recorded of cancer of the stomach, in which an opening into the left pleural cavity resulted.

Case of Heyfelder's, quoted by Diruf, in *Zeitschrift für die Gesammt. Med.*, vol. xlii., p. 474; and Dr Hensley, in *Lancet*, 1847, i., 674.

There are also two cases in which the stomach communicated with an abscess in the left lung.

Dr Hughes, *Tr. Path. Soc. Lond.*, ii., 251. Dr Habershon, *Guy's Hosp. Rep.*, 3d Ser., i., 111.

5. *Between the Stomach and Pericardium.*—A case of simple ulcer of the stomach opening into the pericardium, is preserved in the Museum of King's College, London. (Digestive Syst., No. 37.) For another case of communication between the stomach and pericardium, see Graves's *Clin. Lec.*, ii., 237.

6. *Between Stomach and Portal Vein.*—A case of Broussais's is quoted by Diruf, in which a cancer of the stomach ulcerated into the portal vein.

Zeitschrift für die Gesammt. Med., xlii., 474.

7. *Between Stomach and External Surface of Abdomen.*—Numerous cases of this interesting fistula have been recorded.

Several cases in the *Éphémerides des Cur. de la Nature*, 1754. Three cases by Lieutaud, in *Hist. Anat. Med.*, 1767, ii., 327. Eight other cases by Gérard, *Des Perf. Spont. de l'Estomac*, 1803, p. 69. Dr Stokes, *Lancet*, Jan. 28, 1832. Lefèvre, *Journ. Comp. du Dict. des Sc. Méd.* Cook, *Dublin Med. Journal*, xiv., 271. Beaumont's *Case of Alexis St Martin.* Diruf, *Zeitschift für die Gesammt. Méd.*, xlii., 474. Robertson, *Edin. Monthly Journal of Med. Science*, 1851, i., 1. Schmidt's *Jahrbücher*, vol. lxii., p. 16. Balluff, *Gaz. Méd. de Paris*, 1855, p. 281.

[1] *Manuel d'Anat. Path.*, p. 495.

A remarkable instance of this fistula is also at present in the Aberdeen Royal Infirmary, under the care of my friend Dr Keith. The opening is large enough to admit three or four fingers with ease.

8. *Between Stomach and Peritoneal Cavity.*—Perforation of the stomach into the sac of the peritoneum may result from simple or cancerous ulceration. It is generally followed by speedy death, but a case is on record by Dr Hughes, in which recovery seems to have taken place. (*Guy's Hosp. Rep.*, 2d Ser., iv., 332.)

II. *Cystic.*—Of fistulæ of the gall-bladder there are five varieties:—

1. *Cystico-gastric*, or a communication between the gall-bladder and stomach. This is the rarest variety. An instance of it is mentioned by Cruveilhier (*Op. Cit.*, ii. 541), in which the opening was closed up by a gall-stone; and another is recorded by Chardel (*Monogr. des Dégéner. Skirr. de l'Estom.*, 1808, p. 190), of a cancerous gall-bladder opening into the stomach. Cases also are alluded to by Cruveilhier, of gall-stones being vomited, as a consequence of this lesion.

2. *Cystico-duodenal.*—This is the most common of the five varieties. The gall-bladder contracts adhesions to the duodenum, and ulceration spreads from the interior of the former into the latter. This ulceration generally, or according to some always,[1] is dependent on the pressure of gall-stones. In King's College Museum is a series of preparations, illustrating the early stages of this ulceration. —Dig. Syst., Nos. 257, 258, 259 bis, 264, and 270. The opening into the duodenum is often of considerable size, so as to allow the passage into the bowel of a large gall-stone. In two cases, exhibited to the Pathological Society of London (Mr Pye Smith, *Tr.*, vol. ii., p. 163, and Dr Vander Byl, vol. viii.), the gall-stone thus passed was so large, as afterwards to produce a complete obstruction of the small intestine. A similar preparation is in the Museum of the Royal College of Surgeons.—Pathology, 1182. Preparations of cystico-duodenal fistulæ are not uncommon in our museums. Besides the instances just alluded to, may be mentioned the following:—

Mus. King's Coll., Lond., Dig. Syst., 57 and 259; St Bartholomew's Hosp., Ser. xix., No. 11; St Thomas' Hosp., No. 1412; Charing Cross Hosp., G. 3; Cat. of Mus. of Boston Soc. for Med. Improvement, No. 565; Peacock, in *Tr. Path. Soc.*, Lond., i., 168.

The occurrence of this fistula is also alluded to in the works of Portal, Bonnet, Budd, and Rokitansky; and, indeed, by most writers on the pathology of the liver.

3. *Cystico-Colic Fistulæ*, or communications between the gall-

[1] Budd on *Diseases of Liver*, p. 208.

bladder and colon, appear to be intermediate in frequency between the two first varieties. They are, probably, oftener the result of cancerous ulceration than cystico-duodenal fistulæ. At least all the cases, which I have found recorded, have resulted from cancer.

Museum of Boston Soc. for Med. Impt., 565; Cruveilhier, *Op. Cit.*, ii., 543; Murchison, *Tr. Path. Soc.*, Lond., vol. viii.

4. *Fistulæ between the Gall-Bladder and external surface of Abdomen* are not very rare; perhaps next in frequency to the cystico-duodenal. The diseased gall-bladder contracts adhesions to the abdominal parietes, which gradually become involved in the ulcerative process, until an external fistula is established, through which gall-stones may be discharged. The following are references to cases:—

Civiale (case from wound) *Archiv. Gén. de Méd.*, Ser. 1st, xxviii., 437. Duplay, *Arch. Gén. de Méd.*, 2d Ser., i., 381. Dr Fretin, in do., 5th Ser., iv., 86. Three cases in *Gaz. des Hop.*, 2d Ser., ix., 212, Prag. *Vierteljahrschrift*, xliv., Sup., p. 70. Schmidt's *Jahrbücher*, vol. lviii., 62; lxxxii., 37; lxxxiv., 46; and lxxxvi. Museum of Boston Soc., No. 566. Chelius' Surgery, transl. by South, i., 716. Two cases in *Tr. Path. Soc.*, v., 156 and 158.

Hydatids (Nélaton, *Gaz. des Hop.*, 1854, p. 298) and abscesses of liver (Chelius' *Surg.*, by South, i., 716) may open externally, and afterwards discharge bile, so as to constitute biliary fistulæ.

5. *Between the Gall-Bladder and Peritoneum.*—If the gall-bladder contracts no adhesions to the surrounding parts, ulceration of its walls may end in perforation into the peritoneum, followed by fatal peritonitis. Such cases have been recorded by Andral (*Clinique Méd.*, tom. iv., p. 500), and by Ferral (*Dub. Med. Journal*, xxiii., 170); and, as a result of Typhoid Fever (*Report of London Fever Hospital*, 1850).

III. *Intestinal Fistulæ.*

1. *Between different portions of the Intestines.*—Fistulæ may be formed between the opposed surfaces of two different coils of either the small or large intestine, or between two parts of the same coil. These may result from tubercular peritonitis. A case is quoted by Andral, in which communication was established between two coils of the ileum (*Path. Anat.*, tr. by Townsend and West, ii., 135); and another is mentioned in the *Dublin Medical Press* (xxxv., 357), of a fistula between the ascending colon and sigmoid flexure, the result of cancer. Again, fistulæ may be established between the small and large intestines, as between the duodenum and colon.

St Thomas' Hosp. Mus., P. 40. Charing Cross Hosp. Mus., G. 21. Andral's *Path. Anat.*, tr. by Townsend and West, ii., 135.

In the first two cases, the disease was cancer; in the third, in which the duodenum communicated with the colon through the gall-bladder, the nature of the disease is not stated.

2. *Between the Intestines and External Surface.*—Fistulæ of this

nature may take place at any part of the intestinal canal, as in the duodenum (Dr Streeton, *Lond. Med. Gaz.*, iii., 43); the jejunum or ileum (St Thomas' Hosp. Mus., No. 1229); and diverticula of ileum (King, *Guy's Hosp. Reports*, 1843). Again, fistulæ between the colon and external surface constitute the not unfrequent accident of artificial anus; and, between the rectum and external surface, the very common fistula in ano.

3. *Between Intestines and Peritoneal Cavity.*—Perforations of the intestines into the peritoneum may result from ulceration of various kinds. One of the most frequent forms is that which occurs in the course of typhoid fever.

IV. *Intestino-Urinary Fistulæ.*—Fistulæ may exist between the intestines and different parts of the urinary apparatus. The most frequent are those between the rectum and bladder, or urethra, the recto-vesical and recto-urethral fistulæ of surgical authors. I have not met with any recorded instance of fistula between the ureter and intestine; but in one of the cases of gastro-colic fistula (IV.), the communication took place through the pelvis of the left kidney. Lastly, we may have,—

V. *Intestino-Genital Fistulæ*, which are most common in the female. Thus recto-vaginal fistulæ are an occasional result of parturition. A rarer instance has been recorded in the *Gazette Médicale de Paris* (1837, p. 87), of a fistula between the sigmoid flexure and left Fallopian tube; and Mr Quain mentions the case of a male, in whom there was a communication between the colon and vas deferens (*Lond. Med. Times*, xxi., 295).

Although the object of this memoir is more particularly the subject of gastro-colic fistulæ, it has been thought that the references to other fistulæ of the intestinal canal above given, which were collected during the same investigation, might prove of service to those interested in the subject.

B.—CASES OF GASTRO-COLIC FISTULA.

Gastro-colic fistulæ, or communicating openings between the stomach and transverse arch of the colon, are not of very frequent occurrence, although perhaps they are more common than is generally supposed. Many writers on special pathology have made passing allusion to their occasional existence, such, for instance, as Meckel,[1] Rokitansky,[2] Cruveilhier,[3] Lebert,[4] Boek,[5] Valleix,[6] Wun-

[1] Meckel, *Manuel d'Anatomie Générale*, tom. iii., p. 442.
[2] Rokitansky, *Pathological Anatomy, Syd. Soc.*, vol. ii., p. 43.
[3] Cruveilhier, *Traité d'Anatomie Pathologique*, ii., 539.
[4] Lebert, *Maladies Cancéreuses*, p. 473.
[5] Bock, *Lehrbuch der Pathologischen Anatomie*, i., 645.
[6] Valleix, *Guide du Médecin Praticien*, ii., 618.

derlich,[1] Foerster,[2] Brinton,[3] Barlow,[4] Reeves,[5] and Houel.[6] Isolated cases of the disease have also, from time to time, been recorded; and illustrative specimens are preserved in some of our museums. As yet, however, our knowledge concerning them is very meagre. The object of the present paper is to bring together an account of as many as possible of the cases which have been recorded, and of the preparations which exist in our museums, in order to draw some general conclusions as to the pathology and means of diagnosis of the lesion.

I may mention that the inquiry was first suggested to me, some years ago, by my friend Dr W. Gairdner of Edinburgh. To Dr Gairdner, as also to Dr Kilgour of Aberdeen, and other friends, I am indebted for several cases privately communicated to me. I have also to thank Dr Brinton for several references to cases.

No effort has been spared to make the collection of cases as complete as possible. The English, American, and Continental journals and periodicals (upwards of forty in number), have been carefully searched. All the principal works on pathology, and on diseases of the stomach, have been consulted. I have personally examined all the anatomical museums of London; as also those of Edinburgh, Glasgow, Aberdeen, and Manchester; and have got friends to examine those of Dublin, Cork, and Belfast.[7] I have also searched the catalogues of several American and Continental museums, and have lost no opportunity of appealing to the experience of my medical friends.

Although, as will afterwards appear, it seems not improbable that, in some of the cases to which the ancient writers gave the name of Lienteria, there existed a communication between the stomach and colon, the first well-authenticated instance of the lesion is recorded by Haller, who speaks of it as "one of the most dreadful cases" he had ever known.

I. Haller. *Opuscula Pathologica*, 1755, *Observation* xxviii., p. 60; *Pathological Observations*, 1756, *Obs.* xxiii., p. 48; *copied by Licutaud in his Historia Anatomico Medica*, vol. i., p. 36.

History. A female, died November 1744. "Upon inquiry into the disease, I was told that, about eight years before, she was seized with an illness during her lying-in, of which she never perfectly recovered; and could neither speak clearly, nor bear any solid food ever after;

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[1] Wunderlich, *Handbuch der Pathologie*, vol. iii., part 3, p. 147.
[2] Foerster, *Handbuch der Pathologischen Anatomie*, p. 36.
[3] Brinton, *Perforating Ulcer of Stomach*, p. 41.
[4] Barlow, *Manual of Practice of Medicine*, p. 395.
[5] Dr Evans Reeves, *Diseases of Stomach and Duodenum*, p. 166.
[6] Houel, *Manuel d'Anat. Pathologique*, p. 495.
[7] The preparations in the museums of this country are seven. Guy's, St Thomas', St Bartholomew's, St Mary's, and the London Hospital Museums, each contain one specimen. There is also one in the Edinburgh Royal Infirmary, another in that of Aberdeen; and a wax model of another, in that of Glasgow.

but most of her sustenance had been small beer, which supplied her just with sufficient strength to beg about the town."

Post-Mortem. "The peritoneum, stomach, duodenum, colon, gall-bladder, and liver, were all grown together in one confused mass, shooting out on all sides small white fibres, which degenerated into a thick and soft body, by which the above parts were in a manner glued together. So strong was the cohesion, that the colon could not be detached from the stomach, and there was an open passage from that intestine to the stomach, formed by an ulcer. Hence the colon was empty, and the stomach, in that part which was contiguous to the colon, was very much disfigured with scirrhous tumours and abscesses, but sound at its connection with the œsophagus."

II. Dr Abercrombie. *Pathological and Practical Researches on Diseases of the Stomach.* Edinburgh, 1828. P. 40.

History. A gentleman, aged 56. Previous good health, except slight attacks of dyspepsia. Began to feel languid, and lose flesh, with occasional pain in abdomen. Two or three weeks after this, while walking in the street, seized with vomiting. Vomited matter had odour and appearance of feces. Suffered no inconvenience; but in another week had a similar attack, and, three or four days later, a third. The vomited matter "consisted of thin healthy feces, which could not be distinguished from that which he had passed from his bowels the same day." These attacks returned at various intervals; he might have three or four in a day, or be free from them for a week. Never vomited food; what was vomited "always resembled what was passed from the bowels." Bowels regular. Lived in this way for three months, and died exhausted. A week before death, copious hæmatemesis.

Post-Mortem. Stomach contracted, and adherent to parietes of abdomen, and to arch of colon. At place of adhesion, a softened mass, about two inches in thickness. Occupying the whole of the great curvature of the stomach, was a mass of ulceration. The pylorus, and whole pylorie extremity, were healthy. In the centre of the ulcerated part there was a ragged, irregular opening, fully two inches in diameter, which made a free communication with the arch of the colon; and around the opening there was also some ulceration of the mucous membrane of the colon. Small intestines empty; large contained feces.

III. St Thomas' Hospital Museum. *Old MSS. Catalogue*, No. 1175, B.

"Large abscess (scrofulous) between the stomach and transverse arch of the colon, communicating with both, and also opening through the abdominal parietes." This extract has been copied from the catalogue. The preparation itself has been lost or destroyed, and the above reference is marked "Cancelled." There is no history, except that the preparation was known to have been an old one.

IV. St Thomas' Hospital Museum. *MSS. Catalogue*, 1535, B.

History. "The patient died hectic, without any suspicion having been entertained of disease in the kidneys or intestines."

Preparation. "Extreme result of tubercular disease of left kidney. Various adhesions with the surrounding viscera exist, and a communication has been established between the cardiac extremity of the stomach and the descending colon, through the pelvis of the left kidney. There was a large abscess in the muscles of the loins of left side, which had bared the kidney, but did not communicate with pelvis."—(Catalogue.)

The opening in the stomach is large enough to admit a finger; that in the colon, a swan's quill. The pylorus is not preserved.

V. St Bartholomew's Hospital Museum. *Series* xv., No. 14.

History. None.

Preparation. "Portion of the great end of a stomach, exhibiting a large cancerous ulcer of its coats. The arch of the colon is adherent to the diseased parts, and is penetrated by the ulcer, extending through it from the stomach."—(Catalogue.)

The cancerous mass is situated in the great curvature of the stomach, occupying a space equal to size of palm of hand. Its surface is lobulated, irregular, and ulcerated. It involves the pylorus, which must have been considerably contracted. The opening into the colon is more than an inch in diameter. The surrounding mucous membrane of the colon is but slightly involved in the disease.

VI. Glasgow Hospital Museum. *Preparation* 199.

History. None.

Preparation. Wax model of a fistulous communication between the stomach and transverse colon. A large cavity exists between the two, which has probably been distended with fluid. There are two small openings in the stomach, half an inch and quarter of an inch in diameter respectively; and one in the colon, measuring two inches by three-quarters. Mucous membrane of colon covered with papular ulcerations.

VII. *Case communicated to me by* Mr Edward Newton, *of* 30, *Fitzroy Square.*

History. A gentleman, aged 34. In the beginning of 1838, he began to suffer from pain in the abdomen, and soon after a tumour was felt in the situation of the pylorus, which was pronounced to be cancer. In May 1840, he suffered from obstinate constipation, and began to vomit fecal matter. The only food which he could take was pounded meat or broth. These symptoms were relieved for a time, but recurred at intervals. In December 1840, he died exhausted.

Post-Mortem. The disease was cancer of the pyloric extremity of the stomach. An opening, large enough to admit the finger, passed from this into the arch of the colon, which was firmly adherent to the stomach. The pylorus was constricted by the disease.

VIII. Dr Levenstein *of Berlin. Schmidt's Jahrbücher*, vol. iii., Sup., p. 105. *See also Casper's Wochenschrift*, 1840, No. 50; *Gazette Médicale de Paris*, 1841, p. 89, etc.

History. A shoemaker, aged 61. Strong constitution. Previous health good. In April 1839, began to complain of a peculiar pain in left hypochondrium, entire loss of appetite, very offensive, corrupt eructations, vomiting, borborygmi, and constipation. The vomiting occurred at first only once every four or six weeks, then every week, and by September (1839), almost daily. The vomited matters were often copious, sometimes bilious, at other times like the vomit from a cancerous stomach, but always covered with a thin layer of bile. The feces were always scanty, either thick or thin; generally of a pale colour, like those of jaundice, but never resembling those of lienteria. Slight jaundice. The painful region of the abdomen was slightly elevated, dull on percussion, and yielded, on auscultation, noises similar to the cavernous rales of a pulmonary vomica. (From this symptom, Dr L. diagnosed some internal fistula of the stomach.) The man gradually sank, and died June 1840, death being preceded by universal dropsy. Never had any febrile symptoms, till within a few days of his death.

The colon was firmly adherent to stomach. In the great curvature of the latter, was an opening into the colon, as large as the palm of the
Post-Mortem. hand. This opening was divided into two by a slip of the mucous membrane of the stomach, in such a way, that each half corresponded to one of the two ends of the divided colon, which could only communicate with one another through the stomach.[1]

IX. Dr Gintrac. *Journal de Médecine de Bourdeaux*, July 1842; *copied into Schmidt's Jahrbücher*, vol. xl., 1843, p. 31.

A man, æt. 57, had previously enjoyed good health. Two years before death, digestion became slow and difficult, being accompanied often by
History. fetid eructations and vomiting. These symptoms increased, and profuse diarrhœa was superadded. Pain at epigastrium, but no tumour. Remarkable emaciation; pale, yellow countenance; small, frequent pulse; dry tongue; complete loss of appetite; gradual sinking; death.

At middle of great curvature of stomach an oval opening, 1¼ inch in diameter, connected with a similar opening in corresponding part of trans-
Post-Mortem. verse colon. The margins of both these perforations were intimately connected with one another by a thick, reddish, old membrane. Pylorus normal. Mucous membrane near cardia thickened, with small rounded vegetations. In lesser curvature, a large, rounded, firm whitish tumour, presenting a scirrhous structure. The mucous membrane of the stomach was covered with a yellow fluid, which was also found in the colon.

X. Dr Waters *of Frederick Town, U. S. Philadelphia Medical Examiner*, April 1845; *Edin. Med. and Surg. Journal*, vol. lx., p. 237; *Edin. Monthly Journal*, v. 853; *Vierteljahrschrift für die praktische, etc.*, vol. xii., Sup. p. 53.

A man, æt. 65. In July 1843, attacked with severe dyspeptic symptoms, which persisted. On Jan. 10, 1844, had hæmatemesis, followed by
History. severe colic and melæna. Hæmatemesis recurred at intervals for some weeks, always with pain. Once vomited puriform matter; hæmatemesis ceased, but no improvement. Emaciation; lemon-yellow countenance; marasmus; and death, nineteen months from commencement of illness.

Pyloric extremity of stomach adhered to liver and arch of colon. A mass of cancer at pylorus, more than one inch thick, with an ulcerated
Post-Mortem. surface. Between pylorus and colon an aperture, about half an inch in diameter, which allowed the contents of the stomach to pass into the colon. Mesenteric glands enlarged and indurated.

XI. Mr Whitbourn. *Lond. Med. Gazette*, May 2, 1845, p. 31; *Edin. Med. and Surg. Journal*, vol. lxv., p. 238; *Vierteljahrschrift für die praktische, etc.*, vol. xii., Sup. p. 53.

A widow, æt. 64, admitted into Guy's Hospital, Nov. 6, 1844. For five years before admission, had a protrusion at the umbilicus, and
History. for one year had been troubled with constipation and occasional abdominal tenderness. Soon after admission, the tumour at the umbilicus became hard and painful, and suppurated, discharging an unhealthy purulent matter, mixed with blood. The hardness was then observed to extend towards the left hypochondrium. On Nov. 17th, she had bilious vomiting, with obstinate constipation. On the 19th, bowels relieved with pain, and passage of shreds of disorganized mucous membrane. "From the 20th to 21st, she vomited

[1] Although fetid eructations are noted, no mention is made of the odour of the vomited matter in this case; yet, from the anatomical distribution of the parts, it seems impossible that these did not contain fæces.—C. M.

three pints of feculent matter of dark colour, and liquid," bowels being confined. On the 29th, bilious vomiting and much pain. On Dec. 7th, she vomited two pints of feculent matter, of greater consistence, and supposed to have come from large intestine. The feculent vomiting recurred almost daily; and on Dec. 16th and 17th, was accompanied with copious hæmatemesis; much pain, brown tongue, and pulse 120. Dec. 28.—Strength declining, but no emaciation; œdema of feet.

January 9.—Considerable emaciation.

January 17.—Vomited nearly a pint of feculent matter; is sinking; died in the afternoon.

Post-Mortem. Cancerous deposits in liver, uterus, and lungs. The parts around the umbilicus presented a scirrhous hardness, and the liver and adjoining organs adhered at this place to abdominal parietes. In the arch of the colon, about its middle, there was a wide opening into a slough cavity, the size of an egg, with indurated walls. From this there passed "a simple, free, sinuous canal into the stomach, near the mesian line." The edges of the aperture in stomach were thickened, and of a scirrhous hardness. (No mention of condition of pylorus.) The arch of the colon to the left of the opening was contracted, and its coats thickened. Cæcum and ascending colon distended.

XII. to XVII.—Dittrich. *Vierteljahrschrift für die praktische Heilkunde*, 1848, No. 1, p. 26; *and Oppenheim's Zeitschrift für die gesammte Medicin*, vol. xlii., p. 474.

Dittrich, in a paper on Cancer of the Stomach, speaking of the communicating passages which may result from this disease, states that, out of 160 cases, in six, he had found adhesion to, and perforation of, the transverse colon. Short notes of the *post-mortem* appearances observed in these cases are given by the same author in a series of Reports on Pathological Anatomy, published in previous numbers of the *Vierteljahrschrift*. See, for example, vol. viii., Sup., p. 101; vol. x., Sup., p. 101; vol. xiv., Sup., p. 139. In none of the cases is any allusion made to the symptoms during life, and the appearances described appear only to have varied in the extent of the disease and size of the opening. In three of the cases, at least, the opening was near the pylorus; and in these three cases, the diameters of the openings were about ½, 1, and 1½ inch respectively.

XVIII.—Dr Oscar Diruf. *Oppenheim's Zeitschrift für die gesammte Medicin*, 1849, vol. xlii., p. 474; *and note in Gazette Médicale de Paris*, 1850, p. 644.

History. A servant maid, aged 30, admitted into University Hospital at Erlangen, January 23, 1849. Health good up to a year before admission, when she began to suffer from amenorrhœa, leucorrhœa, headache, nausea, vomiting, and severe pains in the stomach immediately after eating. Vomited at first watery matter, but soon everything she swallowed, except milk. For three weeks, had suffered from a feeling of constriction in swallowing both solids and liquids, or even saliva. On admission, a constant pain in epigastrium, increased by pressure. Here can be felt a firm tumour, extending from left false ribs to left lobe of liver, with muffled but still tympanitic percussion sound, passing into that of liver and spleen. Can only lie on left side; when on right, has pain in left. After eating or drinking, complains of a burning heat in stomach, followed by vomiting, at first of water and mucus, and then of food, as a bitter mass, without any abnormal colour. Tongue clean; appetite bad; great thirst; one scanty stool in four days; stools pultaceous, but normal as to colour and other properties.

Feb. 2.—Vomiting more frequent. (A thin, greenish, odourless fluid.) Stools natural.

Feb. 5.—Stools more frequent; skin yellow; voice hoarse and sonorous.

Feb. 8.—This morning, after tasting something, vomited some ounces of a thin yellow-coloured fluid, which had undoubtedly the odour of feces. The vomiting returned during the following night, and was accompanied by diarrhœa. Matters voided by stool presented same appearance as those vomited, but impossible to say if they contained undigested food, as patient took nothing but milk. No pain.—Diagnosis of Gastro-colic Fistula, by Professor Canstatt.

After this, the patient became rapidly emaciated, the voice failed still more, and collapse supervened. On Feb. 10, there was a return of the feculent vomiting. This was checked by an opiate enema, and did not return. Feb. 11.—Diarrhœa. Feb. 13.—Curdled particles of milk found in stools. No pain, and but little tenderness on pressure over stomach. Feb. 14.—Died at 8 A.M.

Post-Mortem. Stomach adherent, anteriorly, to abdominal wall; below, to transverse colon; and posteriorly, to pancreas. Cavity of stomach contracted; the whole organ, from cardia to pylorus, a mass of cancerous degeneration, its walls being several lines thick, and its mucous surface covered with soft, fungoid excrescences, having all the histological characters of medullary cancer. In the middle of the great curvature, the stomach was perforated by an ulcer, with an irregular margin, coloured yellow by feces, and larger than a crown piece, which opened from the stomach into the adherent transverse colon; in this last, the opening was only about the size of a halfpenny, and was divided into two unequal parts by a remaining bridge of mucous membrane. The opening had not the appearance of recent origin. That in the stomach was overlapped for the greater part by the surrounding cancerous matter, which acted as a sort of valve.

XIX.—Dr H. Davies. *Tr. Path. Soc. Lond.*, vol. i., p. 89; *Lancet*, 1846, vol. ii., p. 536; *Preparation and Drawing in Museum of London Hospital*, A. e. 52; *Post-Mortem Records of Hospital*, vol. i., p. 90.

History. A clerk, aged 54. First symptoms were those of severe dyspepsia. In June 1844, he was seized with fecal vomiting, the feces being partially solid, and not distinguishable from those passed in the ordinary way. (No mention made of undigested food in feces.) Attacks of feeal vomiting recurred at intervals, but might be absent for months; always came on when bowels were confined. Continued in this state for $2\frac{1}{4}$ years. Never had much pain, and continued at his work till within two or three months of his death. Ultimately died exhausted.

Preparation. A limited firm adhesion between arch of colon and lower part of fundus of stomach. Colon drawn up at this part to an acute angle. A perforating ulcer, nearly the size of a shilling, passes from stomach into adherent colon. Margin of ulcer in the stomach thin, perfectly smooth, crescentic, and very intimately connected with margin of corresponding ulcer in colon. Radiated puckerings of mucous membrane of stomach around opening, but no trace of cancerous deposit. Mucous membrane of posterior wall of colon (described by Dr Davies as) protruded into the ulcerated opening so as to form a kind of valve dividing it into two portions. No stricture, nor disease of pylorus. Cicatrix of a second ulcer in fundus.

XX.—Dr Bence Jones. *St George's Hospital MSS. Post-Mortem Book*, 1851, p. 96; *MSS. Case Book*, vol. xii., p. 171. *(Preparation not preserved.)*

History. Female, aged 45, admitted into St George's Hospital, April 16, 1851. Health good previous to October 1850. Began then to suffer from pain in abdomen, vomiting, great constipation, and œdema of feet. Two months before admission, a hard tumour had been discovered in the left side of abdomen; vomited everything she swallowed, and for

three weeks was supported by beef-tea injections. On admission, anæmic, much emaciated, low, and weak. Œdema of legs; general pain over abdomen, increased by pressure. Tumour felt to left of, and above, umbilicus. Vomiting ceased; motions dark and offensive; quick pulse. Continued to get weaker; and on May 4th sickness returned five or six times, bowels being confined.

May 5.—Vomiting more urgent; can retain nothing on stomach. "The matter vomited has a most offensive odour, very like that of gangrene."

May 6.—Died at 2 P.M.

Post-Mortem. Liver firmly adherent to stomach, but healthy. "The transverse colon was adherent to the anterior surface of stomach, which was occupied, as to its pyloric extremity, and also to some extent at both the anterior and posterior surfaces, by a mass of scirrhus, presenting on dividing the pylorus, extensive ulceration. This had moreover ulcerated forwards into the posterior surface of the colon by a narrow elongated opening, as it lay in contact, and firmly consolidated, with stomach. Great vascularity and ulceration of glands in the colon near the opening."

XXI. Mr Jones *of Caernarvon. Trans. Med. and Chir. Society of London*, xxxv., p. 35; *Dublin Med. Press*, 1851, p. 421; *Lancet*, 1851, ii., 586; *Med. Times and Gaz.*, xxiv., 651; *Archiv. Gén. de Méd.*, 5th Ser., i., 365.

History. A boy, aged five, first felt unwell December 10, 1850. Had erythema nodosum on arms and legs, languor, debility, and loss of appetite. These symptoms continued for more than a month, and he lost flesh. On December 31st, he was seized with violent pain in the belly, and vomiting of a dark-brown fluid, like pus from an ill-conditioned abscess. This vomiting lasted for four days, and recurred at intervals up to March 10th, with frequent attacks of pain and progressive emaciation. On January 3d, the vomiting was noted as very fetid; and Mr Jones felt no doubt that the vomited matters were stercoraceous in February, although the odour was not so decidedly fecal as it afterwards became. On March 10th, diarrhœa and loud borborygmi came on, with entire relief to the pain and sickness. Had fifteen stools a-day for five days, and then six for several days more. Improved rapidly; slept well; appetite voracious, but did not gain flesh. Continued to improve for two months. About middle of May appetite again failed, and bowels became torpid.

At beginning of June, after a dose of a mild laxative, vomiting returned. Vomited matters stercoraceous, light yellow, and semi-liquid.

All June and July, continued in the same state. Vomited every second day. Always felt better after vomiting; from being distressed and languid, became cheerful, and called for food. Aperients always caused vomiting, and did not operate on bowels.

At end of July, worse. Vomiting more frequent; bowels more costive; but no pain nor borborygmi since diarrhœa in March.

Gradually sank, and died August 2d.

Post-Mortem. Extreme emaciation. Some turbid serum in abdomen. A perforation, the size of a pin's head, in middle of transverse colon. Stomach small. An adhesion between it and the transverse colon, and an opening allowing the passage of the finger from the one to the other. Small intestines contracted (three feet) and empty. Colon dilated to twice its natural size, forming several coils, and appearing to occupy whole abdomen; filled with a thick yellow liquid, not distinguishable from that vomited. Mucous membrane everywhere healthy.

XXII. Cruveilhier. *Traité d'Anatomie Pathologique Générale*, tom. ii., p. 539, 1852.

History. None.

Cancer of stomach. The cancer occupied the neighbourhood of the pyloric extremity, and opened into the colon at the angle of union of

Post-Mortem. the ascending and transverse colon. The stomach also adhered to the liver and gall-badder, and a great part of its wall was destroyed at the part where it adhered to the former.

XXIII. Dr Duchek. *Schmidt's Jahrbücher der gesammten Medicin*, 1853, ii., p. 24.

Dr Duchek, in his review of cases in Dr Hamernjk's practice at the Hospital of Prague, observes that, out of twelve cases of cancer of the stomach, "bloody diarrhœa happened once, with perforation into the colon."

There is nothing more said as to the case.

XXIV. Dr Willigk. *Vierteljahrschrift für die praktische Heilkunde*, 1853, xxxviii., p. 24.

Dr W., in some observations on cases of perforating ulcer of the stomach, states that, among the interesting cases of this lesion, he had found one where the ulcer had pierced the walls of the colon, which were closely adherent to the great curvature of the stomach, establishing a communication between the stomach and colon. The two openings, the edges of which were closely cicatrized, were more than an inch in diameter.

No history of the case is given.

XXV. Dr W. T. Gairdner. *Case communicated to me by Dr G. Preparation in Dr Haldane's Collection. Post-Mortem Book of Royal Infirmary*, vol. xvii., No. 38. *References to Case in Edin. Med. Journal*, June 1855, p. 80; *Med. Times and Gazette*, xxxii., 19; *Dublin Hosp. Gaz.*, Aug. 1855, p. 208.

A man, æt. 40, admitted into Edinburgh Royal Infirmary, April 1855. Discharged from army, some time before, on account of "stomach

History. complaints."

On admission, in great suffering; tenderness of epigastrium; moaning; with knees drawn up to abdomen; features collapsed, and expressive of pain; cold extremities; almost imperceptible pulse; extreme emaciation; apparently moribund. Stated, that he had had similar attacks repeatedly; that he had long been subject to uneasy feelings in upper part of abdomen, aggravated by motion, and also after eating, which was often followed by vomiting. Had for long been losing flesh; and, latterly, his appetite had failed.

Turpentine stupes were applied to abdomen; and next day, having quite recovered from collapse, following report was taken:—Abdomen moderately swollen; tympanitic. No trace of fluid effusion. Tenderness at epigastrium not extreme. No pulsation, nor appreciable tumour. Veins of abdomen not enlarged. Tongue large, flabby, moist, and clean. Bowels confined.

In a few days, under treatment (milk diet, enemata, and opium), he improved somewhat. Could retain a small portion of food. Once or twice vomited a quantity of half-digested matter, highly acid, smelling like yeast, and containing sarcinæ.

At the end of a fortnight, had plainly less suffering, and the paroxysms of pain (which was seldom entirely absent) were less severe. Could retain a small quantity of animal food best; but even this was always followed by a feeling of repletion, and occasionally by vomiting at very uncertain intervals. Once or twice some doubtful streaks of blood in vomited matter. Stools very scanty and rare; described (to Dr G.) as normal.

The weakness and emaciation, however, increased from day to day; the appetite entirely failed; and although supported by beef-tea enemata, he gradually sank, apparently from pure inanition, and died on May 12th.

Post-Mortem. Abdomen collapsed. No prominence in epigastrium. Stomach hidden under liver, a fold of colon occupying the epigastrium. On raising colon from stomach, finger broke through omentum into a cavity situated in the lesser sac of the peritoneum, bounded by the pancreas behind, and by the stomach and colon in front, and communicating with both of these last organs. Stomach small, and slightly thickened towards pylorus. On opening it, an ulcer an inch and a half in diameter, nearly circular, perforating all coats of organ, on posterior wall, half an inch from pylorus. Its edges only slightly thickened, with no morbid deposit like cancer. Two much smaller ulcers in its neighbourhood, apparently cicatrizing. Pylorus normal. In middle and back part of transverse colon, opposite the head of pancreas, a circular perforation, more than an inch in diameter. The ulcerated walls of both stomach and colon rested on head of pancreas. The passage from stomach to colon was oblique and somewhat funnel-shaped. Colon contained a quantity of greyish pulp, evidently food half-digested.

XXVI. Dr Kilgour *of Aberdeen. Case communicated to me by Dr K. Preparation in Museum of Aberdeen Infirmary*, F. b. 2. *Case-Book, St Luke's Ward*, vol. xii., p. 168.

History. A man, æt. 43, admitted into Aberdeen Infirmary May 23, 1851. Health good up to January last. Began then to suffer from dragging pains at epigastrium, which became attended with a loathing of food, and, by the end of the month, with sickness after meals.

On admission, much emaciated. Pain and tenderness in region of stomach increased after food, which is generally rejected one, two, or three hours after ingestion. Matters vomited, sour, slimy, of consistence of thick gruel, very acid, and sometimes of a greenish or brown colour. Abdomen very flat; no bulging; but in left hypochondrium, near its junction with epigastric and umbilical regions, can be felt a tumour, two inches in diameter, moveable, dull on percussion, not painful. Appetite good. Bowels very costive.

On June 14th he became suddenly worse, complaining of great pain in the belly, which continued without intermission through the night.

June 15.—In a state of collapse. Says he is sure he is dying. Abdomen distended, and very tender. "Thinks there is something burst in his belly." Much thirst; vomiting quantities of a brownish fluid; pulse quick and feeble; skin cold; voice inaudible.

From this attack he rallied, and on 18th vomiting had ceased; he had regained voice, and was much better.

He continued, however, to waste; the vomiting returned, so that he could retain hardly anything on stomach; the appetite failed; and he gradually sank, and died on August 6th.

Post-Mortem. Body much emaciated; abdominal wall close to spine. Intestines much contracted, except the colon, from middle of arch downwards. Stomach connected by strong adhesions to transverse arch of colon. Pylorus scirrhous, very much thickened, and calibre so contracted that a probe only could be passed through it. Near pylorus, two large ulcers, one about the size of a shilling, with thickened, red, and ragged

edges; the other, involving the pylorus, had been larger, but was partially healed. An inch and a half from pylorus, at the point of adhesion between the stomach and colon, was a distinct, irregularly oval aperture of communication between them, large enough to admit the little finger, and with smooth margins, only slightly thickened.

XXVII. Dr Habershon. *Guy's Hospital Reports*, 3d Series, p. 111.

History. A female died in Guy's Hospital, August 5th, 1857. "Fecal vomiting existed for some time before death."

Post-Mortem. Intestines, stomach, and liver matted together by old adhesions. In left side of abdomen an abscess of some extent, bounded in front and to outer side by ribs, internally by stomach and spleen, above by diaphragm and right lung, and below by arch of colon. This abscess communicated with chest by an opening through diaphragm, and was here bounded by lower surface of lung and thickened pleura. It also communicated by two separate openings with the greater curvature of the stomach, and by one opening with the transverse colon. Openings in stomach circular, with smooth edges, not thickened. Abscess filled with partially coagulated blood, and upper end of spleen found sloughing in its interior; stomach and colon also contained a quantity of blood. Several ulcers in transverse colon, with considerable thickening of surrounding gut. An abscess between bladder and rectum, communicating with the latter. Mucous membrane of rectum ulcerated and intensely injected. "Strumous ulceration" of uterus. A vomica in upper lobe of left lung.

XXVIII. Dr Wilks. *MSS. Post-Mortem Book of Guy's Hospital*, 1855, No. 170. *Preparation in Museum.*

History. A labouring man, æt. 67, admitted into Guy's Hospital, August 15, 1855. First marked complaint was of dyspeptic symptoms, about a year before. These increased, with occasional great pain in pit of stomach and left side.

On admission, much wasted and enfeebled. An obscure, not well defined tumour in epigastrium. Much distress and uneasiness after eating; therefore only takes small quantities of fluids. Was understood to say, that he had not had sickness before admission, and had no vomiting while in hospital.

Continued to sink, and died September 20. A week before death, had slight anasarca, and purpura spots on hands and fore-arms.

Post Mortem. A large hard tumour felt at pyloric end of stomach, unconnected with liver, but intimately adherent to pancreas behind and colon in front. On opening the stomach, this was found to be a raised, fungating, carcinomatous growth, size of palm of hand, and with surface sloughy and hanging in shreds. From end of this mass, furthest from pylorus, an opening large enough to admit a goose-quill passed into colon. Finger could be passed through pylorus, but was surrounded by disease. Two other detached growths on surface of stomach in neighbourhood of first. Similar deposits in cæcum; but no alteration of mucous membrane surrounding opening in transverse colon.

XXIX. Mr Hooper May. *London Medical Times and Gazette*, January 1856, vol. xxxiii., p. 38.

History. A shoemaker, æt. 40, admitted into Brompton Hospital, September 18, 1855. Fifteen years before, had been subject to pain in stomach and vomiting after meals, but had quite recovered. Remained well till six months before admission, when slight cough and hæmop-

tysis came on, along with pain and oppression after meals, and a feeling as if food would not pass down.

On admission, anæmia; losing flesh; complexion dusky; pain after food.

October 6.—"For several days has complained of severe headache, with pain in epigastrium and sickness, and during the last two, and throughout to-day, especially after meals, has several times vomited a considerable quantity of yellow matter, having the odour and appearance of rather relaxed feces." Pain after eating; borborygmi; flatulence; tenderness at epigastrium, where "a firmness" can be felt on pressure; increasing anæmia and emaciation. After taking four grains of calomel had several motions, and vomited about same quantity of feces as that passed *per anum*.

October 10.—Vomited fecal matter on evening of 8th, and not since; but has, on several occasions, complained of fecal odour of breath, and taste at times intolerable; bowels freely open. A "splashing sound" heard on percussion, especially on right side of abdomen.

October 11.—Left leg much swollen and painful, so as to prevent sleep; great thirst and craving hunger.

October 15.—Much hiccup; vomiting of feces mixed with undigested food; appetite gone; bowels freely open; motions of same characters as vomited matter.

Continued to sink, and died on October 25, three weeks from commencement of fecal vomiting. For the last week, vomited everything he swallowed. A gastro-colic fistula was diagnosed during life.

Great emaciation. Great omentum puckered, and incorporated with stomach and arch of colon, where they were in contact. On tearing it

Post-Mortem. up, an enormous opening into anterior wall of stomach, near pyloric end, and into transverse colon, at once exposed. About 4 inches of the colon were thus destroyed, and an inch in centre of this space so completely, that nothing but the longitudinal muscular band remained. The opening in stomach corresponded with this, as far as it went, the two being agglutinated by adherent omentum. But aperture in stomach extended an inch and a half farther, to within an inch of pylorus, this portion being closed up by omentum. Ulcerated edges of both stomach and colon dark, very jagged and thickened, but not hard. Stomach and intestines elsewhere healthy. Some feculent matter in stomach.

XXX. Dr Barlow. *Manual of Practice of Medicine*, 1856, p. 422. *Further particulars furnished in private letter.*

An elderly man became a patient of Dr B.'s at the Surrey Dispensary, abont 1836. Had been long suffering from apparently intractable

History. dyspepsia, with great pain and distension, immediately after taking food. Had occasional, but not urgent, vomiting; and Dr B. now "cannot positively say that it was not fecal."

Several perforating ulcers were found in the stomach. Most of these had opened into the portions of intestine, between which and the

Post-Mortem. stomach adhesion had been established before the perforation occurred. Thus, one communicated with duodenum, and two with transverse colon, whilst one opened freely into a large sac or pouch, formed by thick fibrinous lymph effused upon the surfaces of the adjacent viscera. One of the openings into colon was situated at middle of great curvature, and measured a third of an inch in diameter; the other, nearer the fundus, just admitted a probe. The opening into third portion of duodenum was situated near pylorus. No constriction of pylorus.

XXXI. Dr Joseph Bell. *Glasgow Medical Journal*, January 1857, p. 42, *and private letter from Dr Bell.*

A female, aged 33, admitted into Glasgow Royal Infirmary, July 17, 1856. Enjoyed good health till nine months before, when she had a child. Never recovered strength, and soon complained of lancinating pains in abdomen, which continued with occasional severe exacerbations. Five months before admission, copious hæmatemesis.

History.

On admission, much emaciated, and of a deep sallow colour. A large, hard, flat tumour felt in epigastrium, stretching to umbilicus and left hypochondrium, very painful on pressure, and yielding on percussion a clear, somewhat tympanitic sound. Frequent vomiting. Matters vomited were sometimes only ingesta, at other times they were very offensive; and Dr B., on the authority of the house-surgeon, has "no hesitation in believing that feces were vomited." Bowels loose. Debility rapidly increased; and patient died July 31.

Peritoneum of viscera and abdominal parietes studded with nodules of cancerous matter. Stomach, left lobe of liver, and colon firmly connected by a tumour, extending backwards to the spine. On opening stomach, it was found to communicate freely, in fact, nearly in its whole length, with transverse colon. The abnormal opening presented a dark fungous-looking appearance. A portion of the tumour intervened between the walls of the two viscera. Ulceration of colon evidently of more recent date than that of stomach. Microscopic elements of cancer in tumour.

Post-Mortem.

XXXII. Dr C. Evans Reeves. *Case communicated to me by Dr R. Alluded to by him in Work on Diseases of Stomach and Duodenum*, 1857, p. 166.

A male, advanced in years. Had suffered for some time from pain in region of umbilicus, most pronounced from 7 P.M. till 2 or 3 A.M., and after eating. Seven weeks before death, began to vomit fecal matter. For first two weeks, vomiting recurred at intervals of six or seven days; the quantity brought up being scanty, dark coloured, and liquid. Later, it occurred every second or third day; and during the last nine days of life it was incessant, everything but milk and iced water being immediately rejected. Even these, if taken in any quantity, either passed off instantly by the bowels, or were vomited with great straining, particularly if pressure was made over the descending colon, or if he moved in bed. When fluids were injected into colon, if much force was used, and a large quantity thrown up, they passed into stomach and were vomited.

History

He became very feeble and emaciated, and gradually sank.

Stomach very small. Mucous membrane deep purple. Pylorus free. Near the fundus, on great curvature, was an irregular opening, rather larger than a shilling, with ragged edges, situated in the centre of a cancerous ulcer, and communicating with the transverse arch of colon. The two organs adhered intimately, and the opening was of the same size in both. The walls of colon, to right of opening, were affected with cancer, and the canal so narrowed, that fore-finger could scarcely be passed through it. The colon formed an acute angle at point where communication existed. Hence it passed downwards, and was considerably dilated.

Post-Mortem.

XXXIII. Dr Murchison. *Trans. Path. Society of London*, vol. viii.; *Lancet*, 1857, i., 480; *Med. Times and Gazette*, 1857, i., 471; *Preparation in Museum of St Mary's Hospital*, C. *b.* 11.

A coachman, aged sixty-three, admitted into St. Mary's Hospital under Mr Ure, November 11, 1853. Following particulars extracted from case book of Hospital:—Eighteen months before, whilst mounting a carriage, struck left side against the step. Six months after, abscess formed just below left costal cartilages; he lost appetite, suffered

History.

from indigestion, and got very thin. Abscess, increased to size of a large orange, was opened, and pure pus escaped. Experienced great relief, and returned to work. Six months after, another abscess formed in same locality. This also was opened. The fistulous openings of both abscesses continued to discharge.

On admission, a brawny swelling, twelve inches by six, over left false ribs and epigastrium. In this, two fistulous openings, exuding a thin, clear discharge. One of these in epigastrium, near middle line. Through this, a probe could be passed two or three inches into abdomen, and its point freely moved about. Appetite bad; could eat no meat. (No mention made of vomiting.) Extremely emaciated.

While patient was under observation, a very fetid odour was frequently noticed to proceed from fistulous openings, and quantities of a fetid gas would escape from them.

At beginning of December, became worse. Fistulous openings assumed an unhealthy appearance, and discharged a quantity of fetid, fecal-smelling matter. Frequent rigours; great prostration; sallow countenance; œdema of legs; weak, irregular, and intermitting pulse; dry, brown tongue; vomiting; and costive bowels. Vomited matters had a fecal odour, but did not otherwise resemble feces.

Gradually sank, and died December 11th.

Post-Mortem. Three (a third had been made in hospital) fistulous openings, with sloughy margins, in left of epigastrium. These opened into a large cavity, with indurated sloughy walls, which communicated both with the stomach and transverse colon. Anterior wall of stomach, for about one-third of its extent from pyloric extremity, destroyed by cancerous ulceration, and replaced by that portion of abdominal wall forming anterior boundary of sloughy cavity. The whole of pyloric end of stomach, not destroyed by ulceration, occupied by a mass of scirrhus, with a fungoid, ulcerated, sloughy surface. This obstructed greatly the pyloric opening. The stomach at this part firmly adherent to colon. On slitting open colon, an aperture was seen to exist, through which a crow-quill could be passed into sloughy cavity. Margins of this opening quite free from cancerous deposit. Adhesions of liver, etc.

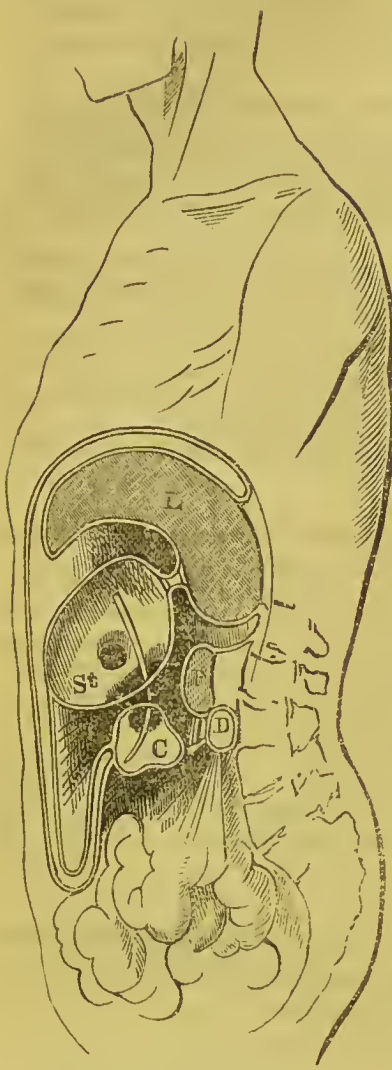
I shall now proceed to consider the conclusions, which may be legitimately drawn from the preceding cases, as to the Pathology, Diagnosis, and Prognosis of Gastro-colic Fistula.

C.—PATHOLOGY OF GASTRO-COLIC FISTULA.

I. *Mode of Origin.*—It is well known that, in ulceration, whether simple or malignant, of the stomach, or any portion of the intestinal canal, perforation, with consequent escape of contents into the peritoneal cavity, is often prevented by the diseased bowel contracting adhesions to neighbouring organs, which thus close up the deficiency in their coats. In this way, perforations of the stomach may be closed up by adherent liver, pancreas, spleen, diaphragm, abdominal parietes, colon, duodenum, etc. The comparative frequency of some of these adhesions, in the case of simple ulcer, has been pointed out by Rokitansky.[1] With regard to the colon, two such instances may be

[1] *Pathology. Syd. Soc. Transl.*, vol. ii., p. 23.

cited out of many others I have met with. In the museum of the Manchester Infirmary, is a preparation (No. 25) of a cancerous ulcer of the stomach, closed up by an adherent colon; and in Schmidt's Jahrbücher,[1] a case is recorded of a simple ulcer of the stomach closed up in a similar manner. It is seldom, however, that the original disease, by such adhesions, is arrested. The ulcerative process advances into the adherent organs, or the cancerous deposit invades them, and then sloughs out in successive patches, until at last, if these organs be hollow, fistulous communications result. The peculiarly favourable relation to one another of the stomach and colon for this result, is well shown in the annexed wood-cut, which also represents a fistulous communication between the two. Gastro-colic fistula then is, for the most part, one of the sequelæ of simple or cancerous ulceration of the stomach. Thus, out of the thirty-three cases collected in this paper, there were



21 from cancer, { 1, 5, 7, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 20, 22, 23, 26, 28, 31, 32, 33.

and

9 or 10 probably from simple ulceration. { 2, 6 ?, 8, 19, 21, 24, 25, 27 ?, 29, 30.[2]

From this it would appear, that the proportion of cases resulting from cancer is more than double that from simple ulceration; and, as simple ulcer of the stomach is about five times as common an affection as cancer, Dr Brinton was not far wrong when he conjectured "that its proportion in the malignant disease is at least thrice (and probably six to ten times) as great as in the ulcer."[3] This accounts for the fact, that some pathologists, such as Rokitansky and Bock, speak of it as a result of cancer of the stomach, but make no mention of it under the head of simple ulcer. This greater rarity of gastro-colic fistula, as a sequela of simple ulcer, may depend on

[1] Vol. lxxxiv., p. 46.

[2] The numbers of the cases will be repeated in the course of the paper, in order to facilitate comparison.

[3] Article on Cancer of Stomach in *Brit. and For. Med. Chir. Rev.*, xix., 479.

three causes:—viz., the fact, that simple ulcer is much more rarely met with in that part of the stomach nearest the colon—the great curvature (in 5 only out of 220 cases);[1] and that there is a greater tendency in cancer to contract adhesions to neighbouring parts before perforation; while, at the same time, the cementing matter is of a less permanent quality than the lymph thrown out in the vicinity of a simple ulcer.

The absolute frequency of gastro-colic fistula, as a sequela of cancer of the stomach, has been considered by Dittrich and Brinton. Dittrich,[2] out of 160 cases, found this result in six, or 3·75 per cent.; but this proportion seems large, and probably Dr Brinton[3] is nearer the truth when he says, that out of 507 cases collected by him, this lesion was observed in eleven, or in 2·17 per cent.

In two of the cases included under simple ulceration (8 and 29), there was probably also extensive sloughing of the adherent coats of the two viscera.

Although I have considered the cancerous and simple ulcer in these cases as commencing in the stomach, and involving the colon secondarily, it seems not impossible that the disease may commence occasionally in the colon. Dr Habershon, in remarking upon his case (27), considered that the disease commenced in the colon; and, in some general remarks on ulceration of the stomach, observes, "A communication sometimes takes place from the colon, but this appears generally to extend from the intestine to the stomach, rather than from the latter to the former."[4] The cases here recorded, however, are quite at variance with such an opinion. Out of the thirty-three cases, there is every reason to believe that the disease commenced in the stomach in twenty-six; in four cases (3, 8, 21, and 32), there are not sufficient data for forming an opinion on the point; and in three only (6, 11, 27), does the disease appear to have been most advanced in the colon after death. In the last of these cases, also, it seems not improbable, that the disease commenced exterior to both stomach and colon, in a different manner from any yet described.

In this case, as also in case 4, I am of opinion that the lesion was produced by an abscess of the abdominal cavity, bursting into both the stomach and colon. In case 4, this abscess evidently originated in tubercular disease of the left kidney, so that the passage between the stomach and colon was through the pelvis of that organ. In case 27, the abscess also opened into the cavity of the chest; the ulceration of the mucous membrane of the colon and rectum does not appear to me any proof that the disease commenced in the colon, for we often find ulceration of the large gut in connection with abscesses of the abdominal cavity, as, for example, of the liver. Dr

[1] Brinton. *Brit. and For. Med. Chir. Rev.*, xvii., p 162.
[2] *Prag. Vierteljahrschrift*, 1848, i. 26.
[3] *Brit. and For. Med. Chir. Rev.*, xix., 479.
[4] *Guy's Hosp. Rep.*, 3d Ser., i., p. 108.

Graves[1] has recorded two cases, which are interesting as regards this mode of origin of gastro-colic fistula. These were cases of abdominal abscesses, which perforated the stomach from without. In one case, the abscess also opened into the pericardium; and there seems no reason why such an abscess should not open both into the stomach and colon. In case 33, it was a question, whether the original disease was cancer of the stomach or an abscess of the abdominal wall. The history gave some countenance to the latter view, but the *post-mortem* appearances rendered the former more probable.

Lastly, it is probable that a gastro-colic fistula may result from the softening of tubercular matter cementing together the stomach and colon, in the same way as a fistula may sometimes be formed between the œsophagus and one of the bronchi. Case 3 is described as a "scrofulous abscess" communicating with the stomach and colon. From the meagre description, however, and the fact that the preparation has been lost, the exact nature of the disease may be doubted. At the same time, there is a case on record by Dr Beneke,[2] which renders this mode of origin very probable. This was a case in which the stomach and colon were glued together by scrofulous peritonitis, and in which the stomach, at the site of adhesion, was perforated, evidently from without, by the softening of tubercular matter. It only required a repetition of the same process, in the direction of the colon, to have completed a gastro-colic fistula. As regards the mode of origin of the fistula, the thirty-three cases then may be classified as follows:—

Cancer commencing in stomach,	20	cases.
Do. colon, (case 11)	1	„
Simple ulceration commencing in stomach, in two cases with sloughing,	8	„
Do. in colon, (6)	1	„
Abdominal abscesses originating external to both stomach and colon,	2	„
Softening of tubercular matter,	1?	„
	33	

2. *Closeness of Adhesion of Stomach and Colon, etc.*—In eighteen of the thirty-three cases, the stomach and colon are noted as intimately adherent; in seven cases (12 to 17, and 23) the closeness of adhesion is doubtful; but in eight cases (3, 4, 6, 11, 25, 27, 31, 33), there is mention made of a cavity of greater or less extent existing between the two. In three of these eight cases (11, 31, and 33), the cavity appears to have been hollowed out of a cancerous mass, and this cancerous mass may possibly have originated external to both stomach and colon,—for instance, in the retroperitoneal glands, as was thought to have been the case in 31. In case 3, the inter-

[1] *Clinical Lectures*, vol. ii., p. 232.

[2] *Lancet*, 1849, ii. 664.

vening cavity is described as a scrofulous abscess. In 25, the original disease was simple ulcer of the stomach; this opened into the lesser sac of the peritoneum, producing a limited abscess, which ultimately burst into the colon; in a similar manner, ulceration of the colon probably gave rise to the formation of the cavity in case 6. In 4, the cavity was the pelvis of the kidney; and in 27, an abdominal abscess.

3. *External Fistulæ.*—In three of the cases, in which a cavity was observed between the stomach and colon, there also passed from this cavity a fistulous opening through the abdominal parietes (3, 11, 33). In 33, this seems to have existed before the opening into the colon.[1]

4. *Situation of the Opening in Stomach.*—An analysis of the cases gives the following results on this point:—

In 4 cases,	opening at or near	fundus (4, 5, 19, 32).
„ 10	„	great curvature (2, 6, 8, 9, 11, 18, 27, 29, 30, 31).
„ 11	„	at or near pylorus (7, 10, 12, 13, 14, 20, 22, 25, 26, 28, 33).
„ 8	„	doubtful (1, 3, 15, 16, 17, 21, 23, 24).
33		

Thus, out of twenty-five cases in which the situation of the opening was noted, in eleven it was at or near the pylorus; in ten, in the great curvature; and in four, at or near the fundus. In two of the cases, in which the opening was situated in the great curvature (29 and 30), there was also ulceration in the neighbourhood of the pylorus; so that the cases in which the pylorus may be said to have been free from disease, were twelve in number (2, 4, 5, 6, 8, 9, 11, 18, 19, 27, 31, 32).

5. *The sizes of the openings* in the stomach, in the different cases, may be classified approximately as follows:—

In 2 cases	diameter less than	½ an inch (28, 30).
3	about	½ an inch (6, 10, 14).
6	„	1 inch (4, 7, 12, 19, 20?, 21).
6	„	1 to 1½ inch (5, 9, 13, 24, 25, 32).
2	„	2 inches (2, 18).
5	„	several inches (8, 29, 31, 32, 33).
9	„	doubtful (1, 3, 11, 15, 16, 17, 22, 23, 27).
33		

In case 33, although the opening in the stomach was large, that in the colon only just admitted a crow quill.

In three cases (8, 18, 19) the opening was divided into two by a slip of mucous membrane; and in case 8, in such a way, that each segment of the colon corresponded to one of the divisions, so that the only communication between the two segments of the colon was through the stomach.

6. *Size of Stomach and Intestines.*—In four cases (18, 21, 25,

[1] See remarks on this case in *Trans. Path. Soc.*, vol. viii., by author.

32), the stomach is noted as small and contracted; and in two (2, 26), the small intestines, as contracted or empty, as also the ascending colon in 26; while, at the same time, in four of these cases (2, 21, 26, 32) the descending colon is described as dilated, or containing fæces. In case 11, the cæcum and ascending colon were much distended, but here there was a stricture in the arch, immediately to the left of the fistula.

7. *Contents of Stomach and Intestines.*—In two cases (9 and 29), fecal matter is noted as having been found in the stomach after death; and in two others (21 and 25), undigested food was found in the colon.

D.—SYMPTOMS AND DIAGNOSIS OF GASTRO-COLIC FISTULA.

Some of the symptoms about to be detailed have only been observed in a few, or in individual cases. It is to be recollected, however, that the observers of these cases have had no previous experience of the affection they were treating, nor any knowledge of the symptoms they might expect. In all probability, several of these symptoms will yet be found to be of more general occurrence. Some of them are so marked, that, even with the hitherto obscure knowledge of the subject, in two cases, at least, the existence of the lesion has been determined during life (18 and 29). In reference to the diagnosis of gastro-colic fistula, it will be convenient to consider the symptoms according to three different stages of the affection, viz., the previous disease, the period of formation of the fistula, and the fistula fully established.

I. *The Symptoms of the Disease which gives rise to the Fistula.*—The great majority of cases (28 at least out of 33) have been found to result from either cancer or simple ulceration of the stomach. The symptoms of these affections (epigastric pain, vomiting, cachexia, etc.) are sufficiently characteristic, and so well known, that it would be superfluous here to consider them. I would merely desire to impress the importance, of ascertaining the previous existence of either of these complaints, in cases of suspected gastro-colic fistula. Moreover, as the fistula is more than twice as frequently a sequela of cancer as of simple ulcer, the existence of an epigastric tumour would, *cæteris paribus*, be favourable to the supposition of its existence. Out of the twenty-one cases depending on cancer,

In 10, the history is either absent or imperfect (1, 5, 12, 13, 14, 15, 16, 17, 22, 23).
In 3, a tumour was absent or not mentioned (9, 10, 32).
In 8, a distinct tumour could be felt (7, 11, 18, 20, 26, 28, 31, 33).

Thus, out of eleven cases of cancerous fistula, a tumour was detected during life at least in eight. In case 29, also, in which there was no cancer, "a firmness" was felt on pressure over the epigastrium.

II. *Symptoms at the period of formation of the Fistula.*—It is probable that sometimes the fistula may form, without any characteristic addition to the previously existing symptoms marking its advent. Thus, in case 2, the first symptom of the fistula (fecal vomiting) came on suddenly, after some weeks of dyspepsia, when the patient was walking in the street, and was attended by no other unpleasant feeling. In many of the cases, however, the formation of the fistula appears to have been accompanied by some local symptoms, or by disturbance of the general system; and, perhaps this has more frequently been the case, than has been observed. Thus, in case 11, the symptoms indicating the existence of fistula were preceded by pain in the abdomen, and the passage of shreds of disorganized mucous membrane *per anum;* in 18, by diarrhœa; in 20, by general pain over the abdomen, urgent vomiting, and quick pulse; in 21, by violent pain in the belly; in 26, by the symptoms of peritonitis, sudden violent pain in the abdomen, vomiting, collapse, etc., while, at the same time, the patient himself felt "as if something had burst in his belly." In case 29, there was pain and sickness for several days; and in 33, rigors, great prostration, vomiting, brown tongue, and irregular, intermitting pulse. Cases 11 and 26 particularly deserve attention in future observations.

III. *The Symptoms and Physical Signs after the formation of the Fistula.*—When a communicating aperture has been formed between the stomach and colon, there is no barrier to prevent the contents of the one viscus passing into the other—fecal matter from entering the stomach—crude and undigested food from passing into the colon, and so being voided *per anum.* These results are what might have been naturally expected from the new condition of the parts; and they are what we actually find. Fecal vomiting, and the presence of undigested food in the stools, are the most frequent and characteristic symptoms of gastro-colic fistula. I shall now consider each of these symptoms, as well as some others, a little in detail.

1. *Vomiting.*—This has been an almost invariable symptom in all the cases observed during life, in which there has been a free communication between the stomach and colon; and in the majority of cases, the vomited matters have contained feces. The following analysis shows the frequency of the symptom in the thirty-three cases:—

In 11 cases, fecal vomiting (2, 7, 8, 11, 18, 19, 21, 27, 29, 31, 32).
In 3 „ vomiting very fetid (9, 20, 33).[1]
In 3 „ vomiting not fecal (10, 25, 26).
In 2 „ no vomiting (4, 28).
In 2 „ history imperfect (1, 30).
In 12 „ no history (3, 5, 6, 12 to 17, 22, 23, 24).

[1] In these cases, the fetor may have been due to the presence of feces, but this is not stated; and it is to be borne in mind, that the matters vomited from a cancerous stomach are sometimes very fetid, when there is no fistula.

Thus, out of nineteen cases, in which the history was clear, fecal vomiting was observed in eleven; and fetid (perhaps fecal), in three. But, of the cases, in which there was no vomiting, *fecal* vomiting could scarcely have been expected in either; in 4, because the communicating passage between the stomach and colon was long and circuitous (viz., through the pelvis of the left kidney); and in 28, because the opening into the stomach, as examined by myself, was only large enough to admit a goose quill, and was overlapped by cancerous matter. These two cases, then, may fairly be excluded; reducing the total number to seventeen, in eleven of which there was fecal vomiting; and in three, fetid. Considering the value of this symptom in the diagnosis of gastro-colic fistula, it becomes an object of importance to determine under what circumstances it may be absent. Dr Gairdner ingeniously endeavoured to account for its absence in his case (25), by the situation of the gastric disease near the pylorus, and believed "it would be found that fecal vomiting was to be looked for chiefly in those cases in which the pyloric opening was free, and in which, therefore, the stomach was not overloaded with its own proper contents, while vomiting of food was to be expected in the opposite class of cases."[1] This opinion of Dr Gairdner's is borne out by the facts now before us. In all the three cases in which the vomiting was not fecal, the pylorus was involved in the disease, as will be at once evident by comparing the numbers of these cases (10, 25, 26) with those given under the head of situation of the gastric opening. In all these cases, the opening was perfectly free; and in 25, very large.[2] In two also of the cases, in which the vomiting is only noted as fetid (20, 33), the disease was in the pylorus. Again, it also holds good, that in all those cases in which the disease was not situated at the pylorus, fecal vomiting occurred. Thus, of the four cases in which the opening was at or near the fundus, it is noted as having been present in two (19 and 32); of the other two, in 4 its absence has already been explained; and in 5 there is no history. Of the ten cases, in which the opening was in the great curvature, fecal vomiting was observed in seven, and fetid (very possibly fecal), in one (9); of the remaining two (6 and 30), there is no history, or an imperfect one. In one case (21) of fecal vomiting, the situation of the gastric disease is doubtful. But it does not appear that the fact of the disease being in the pylorus, produces an immunity from fecal vomiting. In case 7, there was persistent fecal vomiting, with cancer of the pylorus. Although, however, the pylorus is said, from recollection, to have been constricted, it seems more probable that the cancerous ulceration had advanced so far, as not to interfere with the passage of food. From the preceding facts the following conclusions may be derived:—

[1] *Edinburgh Medical Journal*, July 1855, p. 81.

[2] Could the absence of fecal vomiting in this case have depended at all upon the obliquity of the passage from the colon to the stomach?

1. Fecal vomiting is probably present in all cases in which the opening (except this be very minute) is situated in the fundus, or great curvature of the stomach, and may also be present when the disease is in the pylorus.

2. In all cases in which only food is vomited, the opening is at or near the pylorus, so as to preclude the passage of food.

The fact, that food only should be vomited, when there is great obstructive disease of the pylorus, is what might have been expected, and admits of another explanation besides that given by Dr Gairdner. When there is great obstruction at the pylorus, all the food will pass at once into the colon, and so down to the rectum, and little or none through the pylorus into the small intestines. But if no food enter the small intestines, no feces can be formed before arriving at the opening in the arch of the colon, and none can enter the stomach. This diminished function of the small intestines accounts for the fact, that after death, in several cases, they have been observed contracted and empty.

In cases of cancer of the pylorus, vomiting might be less after the establishment of the fistula than before; the food in the former case escaping at once into the colon.

It is not to be forgotten, that fecal vomiting may originate from other causes, such as any obstruction of the bowels, as from strangulated herniæ, intussusceptions, organic stricture, etc. The history, and the other concomitant symptoms of such cases, are generally sufficiently marked, to prevent the possibility of their being mistaken for gastro-colic fistula. At the same time, it is possible to have organic disease of the stomach, accompanied by stricture of the colon, as in a case recorded by Mr Holmes, in the Edinburgh Medical and Surgical Journal;[1] and, if fecal vomiting occurred under such circumstances, the diagnosis would be difficult. There is one distinction, however, between the fecal vomiting in any of these affections and that from gastro-colic fistula, which it is important to bear in mind. In the case of obstructive disease, there is also obstinate and intractable constipation; whereas, in gastro-colic fistula, there may be diarrhœa, or, if the bowels are costive, there is no great difficulty in moving them.

2. As another consequence of feces entering the stomach, there may be a *fecal odour of the breath*, and an intolerable *taste of feces*, as in case 29; or there may be peculiarly fetid eructations, as in cases 8 and 9. In two, if not in all these cases, there was also fecal vomiting.

3. Again, in cases where a cavity exists between the stomach and colon, which also opens outwards through the abdominal parietes (3, 11? 33), *food, as well as fecal matter, may escape through the external opening*. In case 3, there is no history; and in 11, it is doubtful if the external opening passed into the cavity. Fetid gases

[1] Vol. viii., p. 151.

and fecal matter, however, were observed to exude from the external fistulæ in case 33; and, although there is no mention of food having been observed in this case, it is possible that this may have been overlooked. In connection with this point, there is an interesting preparation in the museum of Charing Cross Hospital (G. 21). This is a cancerous strieture of the arch of the colon, in which the colon above the strieture communicated with the duodenum, and also, through the abdominal parietes, with the external surface. In this ease, "any fluid taken into the stomach, flowing by the duodenum into the colon, made its appearance in a few minutes at the umbilicus."

4. *Passage of Undigested Food per Anum.*—It is to be regretted, that in so few of the eases was any observation made upon this interesting point. In seven only is there any mention made of the appearance of the stools, after the probable formation of the fistula (2, 8, 18, 19, 25, 29, 32). In 18, they resembled the matters vomited, and contained curdled particles of milk (the sole article of diet); and in 32, milk and other substances, if not vomited, "passed off instantly by the bowels." In case 29, the stools had the same character as the matters vomited, which consisted of "feces mixed with undigested food;" and in 2 and 19, the stools and vomited matters are described as indistinguishable. In 25, the stools were described to Dr G. (by nurse ?) as normal; yet half-digested food was found in the colon after death. In ease 8 only, are the stools said to have contained no undigested food; yet they were imperfectly formed, being pale, like those of jaundice; so that milk, of which, probably, the patient's diet principally consisted, would have been difficult of detection in them.

For the same reason that fecal vomiting is rarer when the pylorus is obstructed, it may be expected that future observations will show that undigested food in the stools is then most common. The food cannot pass through the intestinal tract to form normal feces, but escapes at once, by a short cut, to the anus. The greater the obstruction at the pylorus, the more readily will the food pass at once into the colon (provided the aperture of communication be of sufficient size); and, consequently, the less probability will there be of fecal vomiting, and the greater of undigested food being observed in the stools.

Undigested food may be found in the stools under other circumstances than that of gastro-colic fistula; but these, as yet, do not appear to be very clearly understood, for medical men too often rely, for the appearance of the stools, upon the observations of the nurse or of the patients themselves. This symptom is occasionally observed in the diarrhœa of children.[1] Dr Lyons,[2] likewise, has recently observed in the Crimea, a form of diarrhœa, in which "the

[1] West, *On Diseases of Children*, p. 479.
[2] *Report on the Pathology of the Diseases of the Army in the East*, p. 8.

egesta often differed in appearance but little from the ingesta; thus solid fragmentary particles of various kinds of food, animal as well as vegetable, could be readily detected in the feces, still preserving their ordinary physical qualities." This affection was attributed to an atonic condition of the alimentary canal, and to the difficult assimilation of the "preserved meats and vegetables," on which the troops were fed. None of the cases proved fatal. The same symptom may also result from ulceration of the pylorus, producing a widening of this orifice, and destroying its action as a sphincter during digestion. Schönlein[1] describes such a case, in which pieces of fish, potatoes, etc., were found undigested in the stools. He also mentions the manner in which he succeeded, during life, in distinguishing the affection from gastro-colic fistula. He gave the patient a meal, of which the ingredients were coloured with cochineal, in order to see how soon the colouring matter would appear in the stools. This meal was followed by seven stools; and it was only in the seventh (almost twelve hours after the meal) that the colouring matter first appeared. Hence he concluded that his case was one of widening of the pylorus, and not of gastro-colic fistula.[2]

Although the causes which may give rise to the presence of undigested food in the stools have not been much studied, the observation is one of great antiquity. It is this affection which Hippocrates, and all the old authors, described under the name of *Lienteria*. Galen, in his commentary on one of the aphorisms (lib. vi., aph. 1) of Hippocrates, tersely observes: "Levitas intestinorum (vel lienteria) est velox exitus eorum quæ comeduntur atque bibuntur, quæ talia deficiuntur, qualia fuére devorata." This lienteria was supposed to depend on two causes—paralysis of the stomach and intestines, or ulceration from acridity of the humors; the former being distinguished by the absence, and the latter by the presence, of pain. It seems highly probable that gastro-colic fistula existed in some cases of the so-called lienteria.[3]

5. *Emaciation.*—This was particularly noticed in twelve out of the twenty-one cases of which there is any history; and in all, it probably existed. In most, it no doubt depended on the original disease; but in case 18, it is noted as particularly rapid after the formation of the fistula; and in case 11, as only commencing after this.

[1] Schönlein, *Klinische Vorträge*, 1842, Case 37, p. 365.

[2] Dr W. T. Gairdner writes me, that he has observed a case similar to Schönlein's. He was inclined to attribute the half-digested food in the stools, not so much to abnormal patency of the pylorus, as to destruction of the gastric glands in the pyloric region, and consequent deficiency of gastric juice. The recent observations of Corvisart, that the active principles of the gastric and pancreatic juices counteract each other when mixed together, might also afford an explanation.—(*L'Union Médicale*, t. xi. No. 50, 1857.)

[3] For numerous references to the works of the old authors on this subject, see the translation, by Dr Adams, of *Paulus Ægineta*, Syd. Soc., vol. i., p. 522.

6. Among *other symptoms of less importance*, may be mentioned the following:—The appetite, for the most part, failed entirely; but in one case (29), it was noted as craving, and accompanied by great thirst. In one case (26), the vomiting, which had previously existed, seemed to cease for a time, after symptoms which indicated the perforation. But sudden cessation of vomiting may take place in the latter stages of ordinary cases of cancer of the stomach. In case 25, the vomited matters contained sarcinæ. In five cases (2, 10, 11, 25, 31), hæmatemesis is noted as having occurred; and in case 10 this seems to have been the most prominent symptom during life, and was accompanied by severe colic and melæna. In three cases (8, 21, 29), loud rumbling noises were frequently heard in the abdomen. The bowels were generally very costive (11, 19, 20, 21, 25, 26, 33), which symptom, when neglected, always was followed by an aggravation of the fecal vomiting; in four cases, however, there was diarrhœa (9, 18, 23, 31); in 10 and 23, the stools contained blood.

An alteration or absence of the voice was observed in three cases (1, 18, 26). Some stress has been placed upon this, as a diagnostic symptom, by Diruf;[1] but, in the two last cases at least, this appeared to result merely from the state of collapse of the general system; and in 26, the voice returned with the disappearance of collapse.

In six cases (8, 11, 20, 28, 29, 33), death was preceded by general dropsy, or anasarca of the lower extremities; and in one, (28), by purpura.

In most cases, there was pain referred to the epigastrium, or some part of the abdomen; but in two cases the absence of this was remarkable. In 21, there was no pain for many months before death, although this at first had been severe; and in 19, in which the fistula existed for upwards of two years, so little inconvenience was experienced, that the patient was able to follow his ordinary employment till within three months of death.

7. *Auscultation and percussion.*—It is not probable that either of these means of diagnosis will be of much service. At the same time, from observations made in certain of the cases, they demand a passing notice. Dr Levinstein, in case 8, heard, on applying the stethoscope over the left hypochondrium, gurgling râles, similar to what are heard in a vomica of the lung; and from this he diagnosed the existence of some internal fistula of the stomach, which, from other symptoms, he concluded to be connected with an abscess of the liver. Notwithstanding the approach to accuracy of Dr L.'s diagnosis, the value as a diagnostic symptom of gurgling râles heard over the stomach, appears very questionable. In case 29, a "splashing sound" was heard on percussion of the abdomen. Again, in two cases (18, 31), a hard tumour was felt in the epigastrium, which,

[1] Oppenheim's *Zeitschrift*, vol. xlii., p. 491.

in place of being dull, yielded a tympanitic sound on percussion. In case 31, this sign attracted the particular attention of Dr Bell, who was perfectly ignorant of Diruf's previous observation. It may have been due to the excavated nature of the tumour.

8. *Vomiting of Enemata.*—A very interesting observation was made by Dr Reeves in case 32. Fluid enemata, if much force was used in their administration, passed from the colon into the stomach and were vomited. This fact suggests an important aid to our diagnosis. If in any case a *coloured* enema was rejected by vomiting, the existence of a gastro-colic fistula would be rendered almost certain. The passage of the enema into the stomach would be favoured by elevating the lower part of the body during the experiment.

From the symptoms which have just been enumerated, it must be obvious that the diagnosis of gastro-colic fistula need seldom be a matter of doubt.

1. We have, in the first place, almost invariably, the symptoms of either cancer or perforating ulcer of the stomach, for a greater or less period.

2. Then we have symptoms, more or less marked, indicating the formation of the opening.

3. When the opening is fairly established, there is very generally vomiting of feces.

4. Fecal vomiting, supervening upon the symptoms of cancer or perforating ulcer of the stomach, would render its diagnosis tolerably certain.

5. Where fecal vomiting is absent, there will be the greater probability of our finding lienteria; and this, with the other symptoms and signs enumerated, would in general leave little doubt as to the nature of the case.

6. When there is lienteria, without fecal vomiting, there will probably be found disease of, or near to, the pylorus, or a very large fistulous communication.

7. In a case with neither lienteria nor fecal vomiting (which probably will never occur, except the communicating aperture be very small), it is unlikely that the lesion would be suspected; but even then its existence might be guessed from observing a greatly increased rapidity of emaciation, and a relief from previously existing pain, combined with the results to be derived from coloured enemata and percussion.

I had lately an opportunity of seeing a patient in the Edinburgh Royal Infirmary, under the care of Dr W. T. Gairdner, whose symptoms render the existence of a gastro-colic fistula highly probable.

Case.—A man, æt. 45, admitted into the Royal Infirmary, April 25, 1857.

History before Admission. Always had good health till the end of December 1856, when he was seized with pain in the chest, violent dry cough, etc. Soon after this, abdomen began to swell, and diarrhœa came on, which continued up to admission. For a fortnight before, had pain after meals, and vomited a great deal.

Considerably emaciated. Abdomen distended and tender. A tumour, with ill-defined edges, felt in right lumbar region, stretching into epigastric and umbilical regions. This tumour appears to vary somewhat in position, but is never absent. There is always more or less, but never perfect dulness, on percussion, over it.

Observations since Admission.

About May 20th, he was first observed to pass in his stools small pieces of half-digested meat, the largest about an inch long by half an inch in thickness, along with membranous masses of vegetable matter. This symptom has since continued. Pieces of ham have been found in the stools, a few hours after being swallowed, quite red and undigested. On one occasion, indigo pills were administered, and the colouring matter was passed *per anum*, two or three hours after. Since two or three weeks after admission, he has had but seldom vomiting, and not much pain. The vomited matters were never known to have a distinctly feculent odour, but were nauseous, and of a brownish colour on one occasion.

The patient is still (July 3) under observation; and for some weeks there has been little change in his symptoms.[1]

The following pathological history would explain the symptoms in this case:—

1. Obstructive disease (cancer) of pylorus, indicated by tumour, pain, vomiting, emaciation, etc.

2. Gastro-colic fistula, by lienteria, cessation of vomiting, and diminution of pain; absence of fecal vomiting depending on obstructive disease of pylorus, as already explained.

3. It is to be borne in mind, however, that the symptom of lienteria may be fallacious, as proved by the cases of Schönlein and Dr Gairdner;[2] but the result of Schönlein's test seemed to favour the existence of fistula.

E.—PROGNOSIS IN CASES OF GASTRO-COLIC FISTULA.

Considering the fatal nature of the diseases, of which gastro-colic fistula is merely one of the sequelæ, the prognosis in all cases must be unfavourable. In addition to this, the speedy escape of nutriment, without absorption into the system, and the disgusting symptom of fecal vomiting, must increase the danger, and render life still more wretched than before. At the same time, it is satisfactory to know, that patients may live for a considerable period after the formation of the fistula. In eleven of the recorded cases, the period during which the patients lived after its probable formation, was ascertained to be as follows:—

Case 20, lived 1½ day.	Case 11, lived 2 months.
„ 18, „ 6 days.	„ 2, „ 3 „
„ 33, „ 10 days.	„ 21, „ 6 „
„ 29, „ 3 weeks.	„ 7, „ 7 „
„ 26 & 32, „ 7 weeks.	„ 19, „ 2¼ years.

[1] *July* 10.—He has since been dismissed from the infirmary. His symptoms were somewhat relieved for a fortnight before he left; the stools appearing more fecal, and there being no vomiting. Nutritious enemata have been given hitherto without much effect. W. T. G.

[2] See page 31.

In the last case, the patient went about, and was able to follow his employment as a clerk, till within three months of his death. In this case the pylorie opening was free. The prognosis will always be more unfavourable, when there are symptoms of pylorie obstruction, with great lienteria.

The fact, that the formation of the fistula may be attended by relief to previously existing pain, has already been alluded to.

In bringing these remarks to a close, I have only to express the hope, that the attention which has been drawn to the subject, will elicit new information from future observers.

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